

LO-TRAN 12.5[®]

HEAT AND GLARE REDUCING
WINDOW GLASS

BETTER LIGHT • BETTER SIGHT

FOR SCHOOLS, OFFICES

COMMERCIAL BUILDINGS

The only Glare Reducing window glass
to meet the requirements of
the National Council on Schoolhouse
Construction PLUS providing high-
efficiency heat absorption!

MANUFACTURED EXCLUSIVELY BY
HOUZE GLASS CORPORATION
POINT MARION, PA.
Distributors in Principal Cities



efficient glare and heat reduction for schools and air conditioned buildings

the difference counts

Genuine glare reduction—not just creation of a neutral tone—is essential to permit the architect or lighting engineer to provide “balanced brightness” in the modern classroom or office. Hence, Houze Glass produced, at the request of members of National Council for School-house Construction and others, Lo-tran 12.5 Window Glass—a neutral gray glass which limits the transmission of daylight to 12.5% while retaining great color fidelity when “looking out.”

Houze Glass Corporation is an outstanding authority on light transmission glass due to more than 40 years experience in sun glass lens manufacture. Better quality sun glass lenses have a transmission value of from 6% to 17%. Scientific tests have proved that light transmission of more than 15% is excessive when direct sunlight is involved.

Houze “Lo-tran 12.5” falls well within the control factor required of best sun glass lenses and is the only window glass marketed nationally that can provide this protection. Colors, viewed through Lo-tran are entirely undistorted and, in fact, are somewhat enhanced by heightened contrast.

A comparison of popular qualities of colored glass currently being marketed indicates:

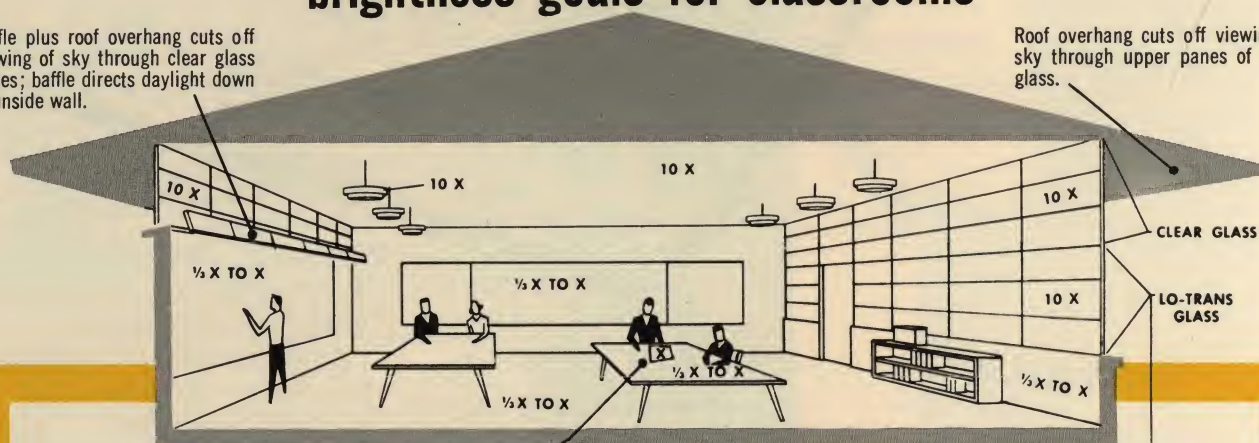
Type	Visual Transmission factor
Clear glass	92%
Type A Grey Tinted	55%
Type B Green Tinted	83%
Houze Lo-tran Grey Tinted	12.5%

Balanced Brightness Houze Lo-tran is the only glare-reducing window glass with sufficiently low light transmission characteristics to permit creation of balanced brightness in a room without use of blinds or drapes. Balanced Brightness is an illumination goal approximating a 1 to 10 contrast between most brightly and most dimly lighted objects in a room. The brightness reduction achieved by use of Lo-tran creates an illumination level that can readily be brought within the 1 to 10 goal by artificial illumination without use of additional shades of any type other than a roof overhang. The roof overhang can also be omitted if a slightly higher brightness ratio is satisfactory.

brightness goals for classrooms*

Baffle plus roof overhang cuts off viewing of sky through clear glass panes; baffle directs daylight down on inside wall.

Roof overhang cuts off viewing of sky through upper panes of clear glass.



LEGEND
X = TASK BRIGHTNESS
10X = HIGH BRIGHTNESS
1/2 X = LOW BRIGHTNESS

This “X” is the Reference Point for Task Brightness.

Neutral colored low-transmission glass permits “tempered” viewing of outdoors without glare.

AREAS OF HIGH BRIGHTNESS (10X)
(Left to right, across top of illustration)

- Glass above high sill wall
- Lighting fixtures
- Ceiling
- Glass above lo-trans. glass
- Low-transmission glass

AREAS OF LOW BRIGHTNESS (1/2 X to X)
(Left to right, across lower part of illustration)

- Wall under high sill
- Front wall
- Floor
- Table top
- Wall under low sill



LO-TRAN 12.5 for heat absorption

Houze Lo-tran is a neutral gray window glass that offers unusually efficient heat absorption properties without the weight of plate glass. Tests conducted by the American Society of Heating and Air Conditioning Engineers Research Laboratory give Lo-tran a Solar Energy Transmission value of 42.0% which indicates that 58% of total energy striking the surface is absorbed or reflected.

A comparison of the heat absorbing properties of some popular brands of colored glass now on the market indicates:

Type	Heat Energy Reflected or Absorbed	Heat Energy Radiated to Interior	Heat Energy Transmitted	Total Heat Gain on Interior
Clear Glass	13%	1.5%	87%	88.5%
Type A	37%	13.5%	63%	76.5%
Type B	56%	23.0%	44%	67.0%
Houze Lo-tran	58%	24.0%	42%	66.0%

Houze Lo-tran is a lime glass and reacts chemically and physically in the same manner as clear glass. Lo-tran glazes the same as ordinary clear glass, using only standard clearances within frames. Double-strength Lo-tran offers heat absorption characteristics equal to $\frac{1}{4}$ " heat absorbing plate glass of other manufacture. The neutral gray color is non-aging and permanent. Solar tests of more than 2 continuous years produced an immeasurable change.

Inherent Advantages of LO-TRAN

Sun Glass Efficiency—Color Fidelity With a 12.5% light transmission factor, Lo-tran offers the only method of obtaining true glare reduction and balanced brightness without use of auxiliary shades except, possibly, an overhang. Government specifications for sun glass lenses require visual transmission values between 12% and 18%. Lo-tran's neutral gray color assures true color fidelity when looking out, the same as neutral sun glass lenses.

See-In Protection The depth of color used in Lo-tran is the only shade which completely protects rooms from "seeing-in" under daylight conditions. This is particularly useful in one and two story classrooms or offices where outside annoyances can be a factor.

Reduced Maintenance and Investment Lo-tran's efficiency and vision control from the exterior is so great that many costly building accessories such as blinds, draperies, sunshades and extensive roof overhangs can generally be omitted depending upon conditions.

From the standpoint of glare reduction, no blinds or draperies are needed, although a roof overhang is recommended when balanced brightness is a goal. The roof overhang may also be omitted when a higher brightness factor is satisfactory. In industrial applications where windows are frequently painted or screened with plastic filters, both costs and maintenance are entirely eliminated.

Upkeep on blinds, draperies and other accessories can be entirely eliminated.

Normal Glazing Procedure Because Lo-tran is furnished in standard double strength thickness, no extraordinary provisions for glazing are necessary. Lo-tran glazes either with face putty or by enclosure in glazing chases the same as clear window glass. Standard glazing clearances are satisfactory.

Heat Radiation Characteristics All window glass has a heat radiation factor that must be considered in figuring air conditioning. Of the total amount of solar energy striking Lo-tran glass about 10% is reflected, 48% absorbed and 42% transmitted. Of the 48% absorbed approximately half or 24% is radiated from both sides of the glass. Therefore, with Houze Lo-tran total heat gain on the interior is 66%. By comparison, ordinary clear glass reflects approximately 10%, absorbs approximately 3% and transmits 87%, resulting in approximately 88.5% total heat gain on the inside.



SIZES

Lo-tran Window Glass is manufactured in double strength thickness (.125") only.

Stock sheet sizes of up to 60" x 48" are standard and cut sizes within these limitations can be furnished on request.

ADDITIONAL TECHNICAL INFORMATION

Spectral comparisons of Lo-tran and competitive glass verifications of light and energy transmission figures, brightness survey charts and other detailed information will be sent on request. See also American Association of School Administrators' booklet "Common Sense in School Lighting."

typical
installations
of
LO-TRAN

Alhambra, California
Azusa, California
Covina, California
Downey, California
Lake Arrowhead, California
Whittier, California
Middlebury, Connecticut
Indianapolis, Indiana
Clinton, Iowa
Wellesley, Massachusetts
Battle Creek, Michigan
Dearborn, Michigan
Detroit, Michigan
Grosse Isle, Michigan
St. Paul, Minnesota
Jackson, Mississippi
Crete, Nebraska
Union, New Jersey
Bellmore, L.I., New York
Buffalo, New York
Syracuse, New York
Greensboro, North Carolina
Cleveland, Ohio
Harrisburg, Pennsylvania
Philadelphia, Pennsylvania
Houston, Texas
Huntsville, Utah
South Ogden, Utah
Madison, Wisconsin
Milwaukee, Wisconsin



First floor classrooms are protected against outdoor annoyances by the limited "see-in" properties of Lo-Tran.



Note use of roof overhang to shield direct light, making "balanced brightness" easily obtained with minimum artificial illumination.



Lo-Tran gives undistorted "see-out" ability with true color values. Neutral gray color of Lo-Tran is permanent.

HOUSE
Lo-tran®

HOUSE GLASS CORPORATION

POINT MARION, PA.

Colored and Technical Glass

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